

## **REMARKS**

This Amendment is submitted in answer to the Office Action dated November 16, 2007, having a shortened three month period set to expire February 16, 2008.

### **I. AMENDMENT TO THE SPECIFICATION**

Applicant has proposed amendments to paragraph [0001] of the present specification to supply the serial number of the cross-referenced co-pending patent application. The proposed amendment to the specification does not contain any new matter.

### **II. CLAIM REJECTIONS UNDER 35 U.S.C. § 112**

On page 2 of the present Office Action, Claims 1-22 are rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Applicant has amended the claims herein to address and overcome the rejection.

Claims 2, 3 and 6 are rejected as lacking antecedent basis for the “software” recited therein. In response, Applicant has amended the claims to rewrite “software” as “management software,” which finds antecedent basis in line 7 of amended Claim 1.

Claim 1 is also rejected for not defining the “monitoring parameter sets” recited therein. In response, Applicant has amended Claims 1, 10 and 19 to recite that the “one or more monitoring parameter sets ... indicate one or more criteria by which software entities will be monitored.”

Applicant has also amended Claim 1, 10 and 19 to clarify that the “hardware resources” recited therein are “hardware resources of the data processing system.”

In Claims 2-3, 11-12 and 20, Applicant has amended the term “software” to “management software” to clarify the antecedent basis for the term in underlying independent Claims 1, 10 and 19.

Applicant has also amended claims 4, 10 and 19 to clarify what the claimed “information” is and where the “information” is located.

Applicant respectfully traverses the rejection of Claim 9 in that the truncated quotation set forth in the present Office Action does not take into consideration the complete phrase recited in the claim, which makes it clear that the “hardware resource [is] shared by said first and said second schedulable software entities.”

Applicant respectfully submits that the amendments and remarks submitted herein overcomes the rejection under 35 U.S.C. § 112, second paragraph, and Applicant respectfully requests reconsideration of the rejection in light of the amendments.

### **III. CLAIM REJECTIONS UNDER 35 U.S.C. § 102**

On page 3 of the present Office Action, Claims 1-4, 6, 10-13, 15 and 19-22 are rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,487,578 to *Ranganathan*. That rejection is respectfully traversed, and favorable reconsideration of the claims is requested.

#### **A. Exemplary Claim 10**

Applicant respectfully submits that *Ranganathan* does not render exemplary Claim 10 unpatentable under 35 U.S.C. § 102 (or § 103) because that reference does not disclose (or render obvious) each feature of exemplary system Claim 10. For example, *Ranganathan* does not disclose an integrated circuit processing unit as recited in exemplary Claim 10 as follows:

wherein an integrated circuit processing unit ... includes:  
    one or more execution units that execute instructions;  
    instruction fetch and dispatch circuitry that supplies instructions to said one or more execution units for execution;  
    storage for one or more monitoring parameter sets that indicate one or more criteria by which software entities will be monitored; and  
    a hardware monitor that ... monitors, in hardware, execution of each of a plurality of schedulable software entities within the processing unit in accordance with a monitoring parameter set ... and reports to management software ...utilization of hardware resources ... by each of the plurality of schedulable software entities.

With respect to the integrated circuit processing unit recited in exemplary system Claim 10, paragraph 12 of the present Office Action states that Claim 10 is rejected under the same rationale of Claim 1. However, in the rejection of method Claim 1 set forth in paragraph 7 of the present Office Action, there is no citation to any feature of *Ranganathan* as disclosing the claimed integrated circuit processing unit. Moreover, upon review of *Ranganathan*, the only processor disclosed therein is processor 610 of Figure 6, which is a conventional desktop personal computer processor (col. 7, lines 60-61) and, as such, does not contain at least the “storage for one or more monitoring parameter sets” and the “hardware monitor” recited in exemplary Claim 10.

Applicant further notes that the other passages relied upon in the rejection of Claim 1 (e.g., col. 3, lines 13-19 and col. 4, lines 11-14 and 26-33 of *Ranganathan*) clearly disclose software monitoring of resource utilization (e.g., by an “operating system, kernel, shell and other well known application environments”) and then software computation of a costing coefficient of each thread’s execution by a software costing engine 120. In the embodiment shown in Figure 6 of *Ranganathan*, an operating system 624 performs both the monitoring and the computation of the costing coefficient. Thus, *Ranganathan* does not disclose an integrated circuit processing unit including “storage for one or more monitoring parameter sets that indicate one or more criteria by which software entities will be monitored” and “a hardware monitor that ... monitors, in hardware, execution of each of a plurality of schedulable software entities in accordance with a monitoring parameter set,” as recited in exemplary Claim 10.

Further, the integrated circuit processing unit recited in exemplary Claim 10 is not rendered obvious by *Ranganathan* under 35 U.S.C. § 103. The proper rationales for arriving at a conclusion of obviousness, as outlined by the U.S. Supreme court in *KSR International Co. v. Teleflex, Inc., et al.*, 127 S. Ct. 1727 (2007), include the following:

1. Combining prior art elements according to known methods to yield predictable results;
2. Simple substitution of one known element for another to obtain predictable results;
3. Use of a known technique to improve similar devices in the same way;

4. Applying a known technique to a known device ready for improvement to yield predictable results;

5. “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; or

6. Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. [All emphasis added.]

In the present case, none of the rationales set forth in *KSR* support a conclusion of obviousness of exemplary Claim 10 in view of *Ranganathan*. In particular, there is no combination of prior art elements, no simple substitution of known elements, no application of known techniques to a known device, no finite number of identified, predictable solutions, and no teaching, suggestion or motivation provided by *Ranganathan* that would lead an ordinary skilled artisan to achieve the invention set forth in exemplary Claim 10.

Because *Ranganathan* discloses conventional software monitoring rather than an integrated circuit processing unit providing hardware-based monitoring as claimed, Applicant respectfully submits that *Ranganathan* does not render exemplary Claim 10, similar Claims 1 and 19 or their respective dependent claims unpatentable under 35 U.S.C. § 102 (or § 103).

#### **B. Exemplary Claim 11**

Exemplary Claim 11 is also not rendered unpatentable by *Ranganathan* because that reference does not disclose (or render obvious) the following features of Claim 11:

the hardware monitor stores at least one monitoring parameter set within the storage for the one or more monitoring parameter sets in response to receipt of said monitoring parameter set from said management software.

With respect to the above features of Claim 11, paragraph 8 of the present Office Action cites col. 9, lines 6-11 of *Ranganathan*, which disclose:

Costing engine 625 measures the utilization of processor 610 and/or other system

resources such [as] the system bus in certain costing interval. Costing engine 625 issues instructions executed by processor 610 to perform summation, propagation and statistical averages on costing data store in memory 620.

The cited passage of *Ranganathan* does not disclose the storage of monitoring parameters by a hardware monitor and further does not disclose doing so in response to receipt of the monitoring parameters by a hardware monitor from management software, as claimed. Consequently, Applicant respectfully submits that the rejection of exemplary Claim 11 and similar Claims 2 and 20 under 35 U.S.C. § 102 in view of *Ranganathan* is overcome.

**C. Exemplary Claim 12**

Exemplary Claim 12 is also not rendered unpatentable by *Ranganathan* because that reference does not disclose (or render obvious) that “said hardware monitor reports said utilization of hardware resources by interrupting said management software,” as recited in exemplary Claim 12.

With respect to the features of Claim 12, paragraph 9 of the present Office Action cites col. 5, lines 60-67 of *Ranganathan*, which discloses one portion of software (a policy algorithm) receiving a notification from another portion of the software (the costing subsystem). No interrupt of management software by hardware (i.e., a hardware monitor) is disclosed. Consequently, Applicant respectfully submits that the rejection of exemplary Claim 12 and similar Claims 3 and 21 under 35 U.S.C. § 102 in view of *Ranganathan* is overcome.

**D. Exemplary Claim 13**

Exemplary Claim 13 is also not rendered unpatentable by *Ranganathan* because that reference does not disclose (or render obvious) the following features of Claim 13:

at least one of said one or more monitoring parameter sets comprises information identifying an instruction type to be detected when processed by the integrated circuit processing unit and a number of instructions to be detected of the instruction type.

With respect to the above features of Claim 13, paragraph 10 of the present Office Action cites col. 5, lines 22-36 of *Ranganathan*, which disclose propagation of costing coefficient to higher levels of abstraction, such as components and subsystems. The cited passage does not disclose

monitoring for certain instruction types or a number of instructions to be detected of an identified instruction type. Consequently, Applicant respectfully submits that the rejection of exemplary Claim 13 and similar Claims 4 and 22 under 35 U.S.C. § 102 in view of *Ranganathan* is overcome.

**E. Exemplary Claim 15**

Exemplary Claim 15 is also not rendered unpatentable by *Ranganathan* because that reference does not disclose (or render obvious) the following features of Claim 15:

the integrated circuit processing unit includes classification storage; and  
... wherein the management software generates a respective classification of each of the plurality of schedulable software entities and stores the classifications in the classification storage of the integrated circuit processing unit in association with identifiers of the respective schedulable software entities.

With respect to the above features of Claim 15, paragraph 11 of the present Office Action cites col. 5, lines 39-50 of *Ranganathan*, which disclose registration of threads of an application so that the threads can be classified as to the subsystems they service. The cited passage does not disclose classification storage within an integrated circuit processing unit or storage of classification of schedulable software entities within such classification storage. Consequently, Applicant respectfully submits that the rejection of exemplary Claim 15 and similar Claim 6 under 35 U.S.C. § 102 in view of *Ranganathan* is overcome.

**IV. CLAIM REJECTIONS UNDER 35 U.S.C. § 103**

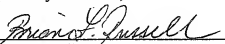
On page 5 of the present Office Action, Claims 5, 7-9, 14, 16-18 are rejected under 35 U.S.C. § 103(a) as unpatentable over *Ranganathan* in view of U.S. Patent No. 6,549,930 to *Chrysos et al.* (*Chrysos*). These rejections are respectfully traversed and overcome for at least the reasons set forth above with reference to the rejections under 35 U.S.C. § 102(b).

**V. CONCLUSION**

Having now addressed and overcome each outstanding rejection, Applicant respectfully submits that all claims now pending are in condition for allowance and respectfully requests such allowance.

No extension of time for this response is believed to be necessary. Please charge any fee necessary to further the prosecution of this application to IBM Corporation Deposit Account No. 09-0447.

Respectfully submitted,



Brian F. Russell

Reg. No. 40,796

DILLON & YUDELL LLP

8911 N. Capital of Texas Hwy., Ste. 2110

Austin, Texas 78759

(512) 343-6116

ATTORNEY FOR APPLICANT(S)